

3.—*Report upon the Oligochaeta in the South African Museum at Cape Town.*—By W. MICHAELSEN (Hamburg).

My stay at Cape Town in the year 1911 being too short for studying the rich collection of Oligochaeta in the South African Museum, Mr. Péringuey, Director of that Museum, offered to send the collection to me in Hamburg for a more exact examination. The present paper is a rather short report upon this collection. A more detailed treatise with figures will be published elsewhere, combining the Oligochaets of the South African Museum with those collected by myself in the year 1911, and with those of the Natal Museum at Pietermaritzburg.

The main value of the present collection is to be seen in the circumstance that it contains the types of Beddard's *Acanthodrilus* species published in his paper: "On a Collection of Earthworms from South Africa belonging to the Genus *Acanthodrilus*" (in P. Zool. Soc., London, 1897). This paper of Beddard still belongs to that period in which only a few species with acanthodriline sexual organs were known, and in which all these acanthodriline species were put into the large genus *Acanthodrilus* in the ancient and primordial sense. Beddard accordingly did not lay any stress upon the marks of a generic division created in much later time. Consequently it is questionable to which of the genera strictiora of younger date some of these ancient species belong. Furthermore, at the time of Beddard's publication there were known only a few acanthodriline species which might be separated easily by a small number of characters. Therefore we look in the diagnoses of Beddard in vain for certain categories of characters which at the present time we regard as necessary parts of a good diagnosis. The examination of this collection thus enables me to give a more modern statement of most of these *Acanthodrilus* species.

It may be noted that there is no doubt of any kind that the specimens examined by myself in every case are the same which

Beddard had in hand when he labelled the different bottles. Every bottle has inside a piece of paper with the scientific name in Beddard's handwriting, and outside on the label an exact note written by Dr. Purcell, saying how many specimens the bottle contained, firstly when sent to Beddard, and secondly when returned to the Museum. This second note in all cases was in accord with what I found. If there is now much confusion, the cause of it must be seen in two rather gross mistakes of Beddard. Firstly, with one exception (*Acanthodrilus photodilus* and *A. lucifuga*), Beddard took it for granted a priori that each bottle contained only a single species, whilst most of the bottles in fact contained more than one. Beddard apparently has examined only a small number of specimens out of each bottle, and then labelled the whole according to his views on this small part only. Secondly, Beddard took it for granted a priori that the different bottles in each case contained different species, whilst in fact this or that species occurs in different bottles. It might be assumed that later the contents of different bottles became mixed. But I am sure that this is not the case. Two circumstances are against this view, viz. firstly the exactitude of Dr. Purcell's registration, and secondly all species from Knysna are found only in the bottles with the label "Knysna," all species whose distribution really is restricted to the Cape Flats are found only in the bottles labelled "Cape Flats." If there indeed had been any intermingling, it could not be conceived why it was restricted in each case to the bottles of the same locality. This statement was necessary to justify my list of synonymies of the species in question.

In the following I give a list of the Oligochaets of the South African Museum at Cape Town, together with short but sufficient diagnoses of the new or insufficiently known species, and with synonymical list and localities.

FAMILY HAPLOTAXIDAE.

PELODRILUS AFRICANUS, Mich.

1905. *Pelodrilus africanus*, Michaelsen in Deutsche Südpolar-Exp., 1901-1903, ix., Zool., i., p. 19.

Loc. Newlands slope of Table Mountain, near Cape Town; Dr. F. Purcell, leg. viii., 1886.

FAMILY MEGASCOLECIDAE.

SUB-FAMILY ACANTHODRILINAE.

EODRILUS ARUNDINIS (Beddard).

1897. *Acanthodrilus arundinis* + *A. arenarius* + *A. falcatus*, Beddard in P. Zool. Soc., London, 1897, pp. 339, 340, 341.
1900. *Notiodrilus arundinis* + *N. arenarius* + *N. falcatus*, Michaelsen in Tierreich, x., pp. 132, 133.
1907. ? *Eodrilus* (? *Microscoler arundinis* + *Eodrilus arenarius* + ? *Eodrilus* (? *Microscoler*) *falcatus*, Michaelsen in Fauna Südwest-Australiens, i., pp. 141, 143.

Loc. Cape Flats, Ronde Vley, near Zeekoe Vley (types of *Acanthodrilus arundinis*), E. from Wynberg (types of *A. arenarius*), and 1 mile E. from Retreat Station (types of *A. falcatus*).

Cape Flats, near Zeekoe Vley; Dr. F. Purcell, leg. 16, xii., 1898.

Cape Flats, $\frac{3}{4}$ mile SE. to S. from Retreat Station; Dr. F. Purcell, leg. 16, xii., 1898.

Cape Flats, 1 mile SE. from Retreat Station; Dr. F. Purcell, leg. 16, xii., 1898.

External Characters. Length 35-60 mm., thickness 1-3 mm., number of segments 12-103.

Colour yellowish grey; without pigmentation.

Head epilobous.

Setae separated, in general $aa : ab : bc : cd = 5 : 3 : 5 : 6$; $dd = ca.$
 $\frac{2}{7} \mu$; ab diminishing toward the male pores.

Clitellum ring-shaped, at the $\frac{1}{2}$ 13 or 13-16 segments.

Prostate pores in b .

Seminal furrow laterally convex.

Spermathecal pores at $\frac{7}{8}$ and $\frac{8}{9}$ in b .

Copulatory tubercles varying in number and in arrangement, mostly unpaired, at the 8-11 and 16-23 segments or a part of them, often together with paired ones which most frequently are found at the male area, but sometimes also at the 10 segment.

Internal Anatomy. Septa 6/7-11/12 very little thickened.

Alimentary tract: A small but distinct and glittering gizzard in the 5 segment; no calciferous glands.

Excretory organs: Meganephridia without terminal bladder.

Male organs: Two pairs of free testes and spermiducal funnels. Three pairs of sperm-sacs in the 9, 11, and 12 segments at the septa 9/10, 10/11, and 11/12. (In the 10 segment free masses of develop-

ing sperm, but no sperm-sacs.*) Prostates tubelike, occupying some (3 or 4?) segments, with rather long and nearly straight duct, and a thicker, serpentine glandular part. Penial setae ca. 1 mm. long and in the middle ca. 25μ thick, slowly getting thinner towards the distal end which is about 13μ thick; distal quarter curved to about a quarter of a circle; distal end abruptly much more slender than the adjacent part, quite smooth, with very fine tip bent in the form of a hook; the interruption at the proximal end of the slender distal part of the seta is caused by a short and broad chisel-like or scale-like protuberance or tooth semi-encircling the seta (noted in none of the three species of Beddard, but occurring in all type specimens examined by myself, as well as in all other examined specimens assigned to *Eodrillus arundinis*); at the part proximal to this protuberance the seta is ornamented by a small number of smaller protuberances, about 8, standing at the proximal end of small scar-like recesses.

Spermathecae: Ampulla pear- or sac-shaped; duct egg-shaped, sharply separated from the ampulla, about half as long and a quarter as thick as the ampulla; from the middle of the duct arise generally 2, rarely 3, or even 4 diverticula, which are nearly as long as the ampulla, and consist of a cylindrical seminal-tube and a thin, and short stalk.

EODRILLUS PERINGUEYI, n. sp.

Loc. Moddergat, near Lynedoch in the Stellenbosch district; L. Péringuey, leg.

External Characters. Length 60-70 mm., maximal thickness $3\frac{1}{3}$ - $3\frac{1}{2}$ mm., number of segments 126-134.

Colour dirty grey.

Head epilobous (ca. $\frac{3}{4}$).

Setae at the ends of the body enlarged, in general ventrally widely paired, dorsally very widely paired; in the middle of the body $aa : ab : bc : cd : = 7 : 4 : 8 : 6$, at the ends of the body about $aa : ab : bc : cd = 6 : 4 : 6 : 6$. Towards the male pores ab slowly diminishing; $dd = \frac{1}{3} - \frac{2}{7} \mu$.

Prostate pores at the 17 and 19 segments in b .

Seminal furrows slightly bent, laterally convex.

Spermathecal pores at $\frac{7}{8}$ and $\frac{8}{9}$ in b .

Copulatory papillae transversely oval, one pair at the hinder

* In all his species in the paper in question Beddard noted these free sperm-masses erroneously as sperm-sacs. I mention this fact here, but it also refers to other species as well as this one.

part of the 9 segment laterally of and close by the lines of the setae *b*.

Internal Anatomy. Septa 6/7-13/14 thickened, 9/10-11/12 rather strong.

Alimentary tract: A large gizzard in the 5 segment. No calciferous glands.

Male organs: Two pairs of spermiducal funnels free in the 10 and 11 segments. Two pairs of grape-like sperm-sacs in the 11 and 12 segments at the septa 10/11 and 11/12. Prostate confined each to one segment; glandular part thick and narrowly serpentine; duct short and thin. Penial setae in two different forms: (1) slender form very long (ca. 1.75 mm.) and extraordinarily thin (ca. 7 μ), thread-like, only a little bent, quite smooth, if not ornamented by a small number of short and clumsy, slightly bent teeth; distal tip simply pointed; (2) clumsier form ca. 0.9 mm. long, and proximally 9 μ thick, distally thinner; slightly bent; distal part with exception of the slender and simply pointed tip ornamented by widely and irregularly scattered rather large and clumsy teeth, which are placed at the proximal end of longitudinal scar-like recesses, and form the distal end of longitudinal convex protuberances; these longitudinal recesses and protuberances being placed alternately at two sides of the seta, the latter appears to be serpentine at the distal half.

Spermathecae: Ampulla slender, sac-shaped, opening through a very short conical duct; into the latter open two rather large club-shaped diverticula with short and narrow stalk, and not quite as long as the ampulla; seminal chamber of the diverticula not quite simple, but with slightly folded walls.

EODRILUS PURCELLI, n. sp.

Loc. Newlands slope of Table Mountain near Cape Town; Dr. F. Purcell, leg.

External Characters. Length 28 mm., thickness 0.9-1.3 mm., number of segments ca. 90.

Colour yellowish grey.

Setae ventrally widely paired, dorsally very widely paired; *ab* somewhat diminished towards the male pores; $aa \cong bc \cong cd = ca. 1\frac{1}{4}-2 ab$; $dd = ca. \frac{1}{2} \mu$.

Clitellum ring-shaped at the 14-16 segments, covering also small parts of the 13 and the 17 segments.

Prostate pores at the 17 and 19 segments in *b*.

Seminal furrows bent rather strongly, laterally convex.

Spermathecal pores at 7/8 and 8/9 in *b*.

Internal Anatomy. Alimentary tract: A rather large glittering gizzard in the 5 segment. No calciferous glands.

Male organs: Two pairs of free spermiducal funnels in the 10 and 11 segments. Three (?) pairs of sperm-sacs in the 9, 11, and 12 segments (?). Prostates tube-like, restricted to 1 segment or to 2 segments; glandular part irregularly wound; duct rather short, quite straight, about half as thick as the glandular part. Penial setae in two different forms: (1) slender form ca. 0.9 mm. long and proximally ca. 8μ thick, distally $3\frac{1}{2} \mu$ thick, slightly and simply bent; distal end flattened and somewhat broadened (to about 5μ), somewhat hollowed, ending in two clumsy tips between which is expanded a plane with concave edge; distal end of seta ornamented with some scarce and small clumsy teeth or knobs, which are placed in the proximal ends of longitudinal scar-like recesses, and hardly project above the general surface of the seta; (2) clumsier form ca. 0.4 mm. long and proximally 10μ thick, in the middle still 9μ thick, and quickly diminishing not long before the distal end; in general nearly straight, but distal end bent to the form of a spiral, with a simple tip; distal part of the seta, with the exception of the bent tip, ornamented by rather gross scale-like protuberances at the proximal end of rather deep scar-like recesses.

Spermathecae: Ampulla longitudinally sac-like; duct sharply separated from the ampulla, about as long and as thick as the latter; somewhat above the distal opening of the duct the latter is entered by a diverticulum, which is somewhat shorter than the ampulla, and which has the shape of a forked tube; the two ends of this forked diverticulum are of somewhat different length, and the longer one is about as long as the common basal part.

EODRILUS DRYGALSKII, Mich., var. nov. CASTELLI.

Loc. Kasteels Poort Gorge, Table Mountain, near Cape Town; Dr. F. Purcel, leg. Northern slope of Table Mountain, near Cape Town; Dr. W. Michaelsen, leg.

External Characters. Length 48-58 mm., maximal thickness $3-3\frac{1}{2}$ mm., number of segments 110-150.

Copulatory organs wanting or two unpaired transversely oval glandular cushions medially-ventrally at the 17 and 19 segments, and one pair of transversely oval papillae at the hinder part of the 6 or the 9 segment, or an additional unpaired similar one at one side of the 21 segment.

Internal Anatomy. Penial setae in general shaped like those of the typical form, but differing in the shape of the ornaments, which in this variety are not sharply pointed smooth thorns, but more clumsy protuberances, the distal slope of which is roughened by a rather large number of very small roundish or pointed knobs.

Spermathecae: Ampulla apparently constantly with a neck-like contraction at the middle.

In other respects like the typical form.

CHILOTA CAPENSIS (Bedd.).

1885. *Acanthodrilus capensis*, Beddard in Proc. Phys. Soc., Edinburgh, viii., p. 370.

1886. *Acanthodrilus capensis*, Beddard in P. Zool. Soc., London, 1885, p. 170.

1895. *Anthodrilus capensis*, Beddard in A Monograph of the Order of Oligochaeta, Oxford, 1895, p. 539.

1900. *Chilota capensis*, Michaelsen in Tierreich, x., p. 147

Loc. Cape Colony (without further notes, types of *Acanthodrilus capensis*), Moddergat, near Lynedoch in the Stellenbosch district; L. Péringuey, leg.

External Characters. Length 90–110 mm., maximal thickness 6–7 mm., number of segments 80–146.

Colour dorsally light brownish grey, like smoke.

Head tanylobous.

Setae at the hinder end somewhat enlarged, in general ventrally narrowly or widely paired, dorsally separated; at the 8 segment $aa : ab : bc : cd = 6 : 4 : 8 : 9$; at the hinder end $aa : ab : bc : cd = 6 : 4 : 6 : 6$; ab towards the male pores diminishing; $dd = ca. \frac{1}{3} \mu$.

Nephridial pores generally in c .

Clitellum at $\frac{1}{3}$ 13–18 segments ($= 5\frac{1}{2}$).

Prostate pores in b upon small papillae.

Seminal furrows slightly bent, laterally convex, passing the 18 segment laterally from the setae ab which here are normally developed.

Spermathecal pores at $7/8$ and $8/9$ in b .

Copulatory organs: Ten pairs or less of copulatory cushions or papillae at or near the ventral pairs of setae (at a part of the segments 7–21).

Internal Anatomy. Septa $6/7$ – $13/14$ thickened, the septa $9/10$ and $10/11$ very strong.

Alimentary tract: A large gizzard in the 5 segment. No calciferous glands.

Male organs: A pair of grape-like sperm-sacs in the 11 segment (in the 9 segment no sperm-sacs seen—wanting?). Prostates tube-like, occupying only a few segments. Glandular part forming some windings; duct short and thin. Penial setae 2–2½ mm. long and proximally ca. 30 μ thick, distally slowly diminishing, being 20 μ thick a little before the distal end, nearly straight in the proximal three quarters; distal quarter bent at a blunt and rounded angle, flattened and somewhat broadened, smooth at the extreme end, or else ornamented by rather densely crowded slender triangular spinelets.

Spermathecae: Ampulla sac-like, distally narrowed. Duct shorter than the ampulla and proximally about half as thick, distally thinner. The duct arises from the ampulla at a right-angle and bears at its proximal end a moderately large unstalked diverticulum which is bent down and is lying just in the line of the ampulla. The diverticulum is provided with some seminal chambers which are placed peripherally and are separated only incompletely from the main central chamber of the diverticulum.

CHILOTA BERGVLIETANUS, Mich.

1908. *Chilota bergvlietanus*, Michaelsen in Denksch. Jena, viii., p. 37, Taf. v., figs. 5–9.

Loc. Table Mountain near Cape Town.

CHILOTA VANHÖFFENI, Mich.

1905. *Chilota Vanhöffeni*, Michaelsen in Deutsche Südpolar-Exp., 1901–1903, ix., Zool. i., p. 42, Taf., figs. 8a, 9.

Loc. Table Mountain near Cape Town; Dr. F. Purcell, leg.

CHILOTA MONTAGUANUS, n. sp.

Loc. Montagu Pass, 3 miles N. from George; Dr. F. Purcell, leg.

External Characters. Length 63–72 mm., thickness 2½ mm., number of segments, 126 and 116.

Head tanylobous.

Setae ventrally widely paired, dorsally separated, in general $aa : ab : bc : cd = 3 : 2 : 3 : 3$. Towards the male pores ab diminishing. $dd = \text{ca. } \frac{2}{7} \mu$.

Nephridial pores in the lines of setae c .

Clitellum at the 13-16 segments (= 4), ring-shaped, but at 16 interrupted by the male area.

Male area at the 16-20 segments.

Prostate pores upon moderately large papillae medially from *b*, but apparently only pressed medially in consequence of the contraction of the male area, originally probably in *b*.

Seminal furrows nearly straight, at the 18 segment dislocated laterally.

Spermathecal pores in *b*.

Internal Anatomy. Alimentary tract: A large gizzard in front of the male organs.

Male organs: Two pairs of sperm-sacs in the 9 and 11 segments. Prostate tube-like, coiled, occupying only a few segments. Penial setae about 1.1 mm. long and proximally ca. 60μ thick, diminishing towards the distal end, strongly bent with a curve corresponding to a quarter of an ellipse. Distal end flattened not broadened, about 35μ broad, ending in a sharp roundish edge. With exception of the extreme distal end the distal two-third parts of the penial seta are ornamented at the convex side of the bending by densely crowded transverse rows of fine and slender spinelets (often inconspicuous).

Spermathecae: Ampulla nearly globular; duct about half as thick and twice as long. Into the distal end of the duct opens a rather shortly and narrowly stalked diverticulum with a thick kidney-shaped or flattened heart-shaped seminal chamber. The stalk of the diverticulum arises from the sinus of the seminal chamber. The latter is provided with a large number of small seminal chambers which are only imperfectly separated from the main central chamber.

CHILOTA EXCAVATUS (Bedd.).

1897. *Acanthodrilus excavatus*, Beddard in P. Zool. Soc., London, 1897, p. 342.

1900. *Chilota excavata* + ? *Ch. sclateri*, Michaelsen, Tierreich, x., p. 156, p. 148.

Loc. Knysna forest (types of *Acanthodrilus excavatus* and *A. sclateri*), Knysna, main forest; Dr. E. Warren, leg. Jan., 1911.

External Characters. Length 35-50 mm., thickness 1.2-1.5 mm., number of segments 78-95.

Head epilobous.

Setae ventrally widely paired, dorsally separated, in general $aa : ab : bc : cd : dd = 8 : 5 : 8 : 10 : 20$. Width of ventral pairs *ab* diminishing slowly towards the 18 segment. $dd = \text{ca. } \frac{4}{15} \mu$.

Nephridial pores in the lines of setae *c*.

Clitellum at the 13-16 segments (= 4), in general ring-shaped.

Male area a rounded pentagon, in front intruding somewhat into the 16 segment.

Prostate pores upon nearly hemispherical papillae in the lines of setae *b*.

Seminal furrows nearly straight, passing the 18 segment laterally from the setae *ab* which are normally developed.

Spermathecal pores in the lines of setae *b*.

Internal Anatomy. Alimentary tract: A very small but distinct gizzard in the 5 or 6 segment. No calciferous glands.

Male organs: Two pairs of sperm-sacs in the 9 and 11 segments. Prostates with very thick and irregularly wound glandular part, occupying not much more than the 17 and 19 segments respectively. Penial setae very long and slender, switch-like, about 1.5 mm. long and in the middle 13 μ thick, proximally thickened to about 18 μ , distally diminishing to a thickness of about 5 μ , proximally bent only a little, distally bent strongly in the form of a wide spiral. Distal end a little broadened, two-edged, flattened or even a little hollowed at the concave side, with indistinct granulation at the concavity. The distal tip of the penial seta is simple.

Spermathecae: Main pouch pear-shaped with short and narrow, indistinctly separated duct. Into the latter opens a diverticulum which is larger than the main pouch. The diverticulum has the shape of a thick tube bent to form a knee, with a rounded protuberance at the prominent angle of the knee.

CHILOTA LUCIFUGA (Bedd.).

1897. *Acanthodrilus lucifuga*, Beddard in P. Zool. Soc., London, 1897, p. 343, fig. 2.

1900. *Chilota lucifuga*, Michaelsen in Tierreich, x., p. 146.

Loc. Knysna forest (type of *Acanthodrilus lucifuga*), Knysna main forest; Dr. E. Warren, leg. Jan., 1911.

External Characters. Length 65 mm., thickness $1\frac{1}{2}$ -2 mm., number of segments about 103.

Head tanylobous.

Setae ventrally widely paired, dorsally separated, in general $aa : ab : bc : cd = 7 : 5 : 8 : 8$. $dd = ca$. $\frac{1}{4}$ μ . Width of ventral pairs diminishing towards the male pores slowly but finally more rapidly.

Nephridial pores in the lines of setae *c*.

Clitellum ring-shaped, at the 13-17 segments (= 5).

Prostate pores between the lines of setae *a* and *b*, nearer to the latter.

Seminal furrows laterally convex, passing the 18 segment laterally from the setae *ab*, which here are normally developed.

Spermathecal pores in *b*.

Copulatory organs: Unpaired copulatory cushions ventral and median in the 11–21 segments, and in addition more or less indistinct paired ones in all or some of the segments: 7, 8, 9 and 15.

Internal Anatomy. Alimentary tract: A large gizzard in front of the male organs. No distinct calciferous glands.

Male organs: Two pairs of sperm-sacs in the 9 and 11 segments. Prostates very long, reaching backwards about as far as to the 30 segment, straight or forming some slight windings, in the whole length attached to the long sacs of the penial setae, with relatively long and slender duct. Penial setae very long and slender, string-like, about 6 mm. long and only 14–15 μ thick, slightly bent. Distal end often bent somewhat more strongly (but not in a spiral or like a corkscrew), slightly broadened and flattened, somewhat hollowed at one side, nearly spoon-shaped (with some transverse rows of very fine spinelets?).

Spermathecae: Ampulla globular or pear-shaped, with a short and narrow duct. Into the duct opens a large tubular diverticulum, which is much longer than the ampulla and swollen at the proximal end to form a simple seminal chamber. This seminal chamber is pear-shaped or globular.

CHILOTA PHOTODILUS (Bedd.).

1897. *Acanthodrilus photodilus*, Beddard in P. Zool. Soc., London, 1897, p. 343.

1900. *Chilota photodila*, Michaelsen in Tierreich, x., p. 148.

Loc. Knysna forest (types of *Acanthodrilus photodilus*). Knysna, main forest; Dr. E. Warren, leg. Jan., 1911.

External Characters. Length 60–145 mm., thickness about 3.5–3.6 mm., number of segments 102–158.

Head taenylobous.

Setae ventrally widely paired, dorsally very widely paired as far as separated. In general $aa : ab : bc : cd = 3 : 2 : 3-4 : 3$. Width of ventral pairs a little diminished towards the 18 segment. $dd = ca. \frac{2}{3} \mu$.

Nephridial pores in the lines of setae *c*.

Clitellum ring-shaped, at the 13–16 segments (= 4).

Prostate pores in *b*.

Seminal furrow laterally convex, passing the 18 segment just lateral from the setae *ab*, which here are normally developed.

Spermathecal pores in *b*.

Copulatory organs: Apparently constantly an unpaired copulatory cushion placed intersegmentally at 21/22, rarely a second at 20/21, in addition some smaller paired copulatory cushions or papillae at the hinder part of the 9 segment or at the hinder part of the 8 and the fore part of the 9 segment.

Internal Anatomy. Septa 8/9-10/11 thickened.

Alimentary tract: A distinct gizzard in the 5 segment. No distinct calciferous glands.

Male organs: Two pairs of sperm-sacs in the 9 and 11 segments. Prostates long, tubular; glandular part coiled at least in the distal part, sometimes stretched in the proximal part, and here attached to the sacs of the penial setae. Duct short and thin. Penial setae very long and slender, about 5-8 mm. long and proximally ca. 35 μ thick, distally diminished in thickness, somewhat before the distal end 10 μ thick. Distal end widely bent like a corkscrew, flattened, without ornamentation.

Spermathecae: Ampulla pear-shaped; duct thin and slender, longer than the ampulla. At the proximal end of the duct is an unstalked diverticulum, which is attached to the duct along the greater part of its length and free only at the smaller extreme end. The outer border of the diverticulum has two or three slight notches.

Formae. The specimens collected by Dr. E. Warren differ in length and in the arrangement of the setae somewhat from the type specimens; they may be separated as a distinct form.

f. *typicus*: Length 60-80 mm., thickness 3½ mm.; *aa*:*ab*:*bc*:*cd* = 3:2:3:3.

n.f. *castaneus*: Length about 145 mm., thickness 6 mm.; *aa*:*ab*:*bc*:*cd* = 3:2:4:3.

CHILOTA PRIESTI, n. sp. f. TYPICUS.

Loc. Avontuur, Uniondale division; Mr. Priest, leg.

External Characters. Length 200 mm., thickness 7-9 mm., number of segments ca. 162.

Head tanylobous. Segments of the fore body, with exception of the first 4, divided each into two segment-like ringlets.

Setae rather small, widely paired. In general *aa*:*ab*:*bc*:*cd*:

$dd = 3:2:4:2:6$. Width of ventral pairs diminished towards the 18 segment. $dd = ca. \frac{1}{4} \mu$.

Nephridial pores in the lines of setae *c*.

Prostate pores in *b*.

Spermathecal pores in *b*.

Internal Anatomy. Septa 6/7–12/13 strongly thickened, 13/14 slightly thickened, 14/15 hardly thickened.

Alimentary tract: A large gizzard in the 6 segment. No distinct calciferous glands.

Male organs: Prostates very long, thin tubular, wound, with rather long and thin duct. Penial setae ca. 2.1–2.4 mm. long and proximally 60–66 μ thick, straight, distally flattened and distinctly broadened to a breadth of about 0.1 mm., and somewhat enrolled from the edges to form a chisel; distal tip a little narrowed, ending in a sharp concave edge. The distal two-third parts, with exception of the distal tip, are ornamented; they bear densely crowded transverse rows or ringlets of fine and slender spinelets.

Spermathecae: Ampulla pear-shaped, rising from the upper part of the hinder side of a thick cylindrical duct, the free proximal extremity of which is rounded and represents the single diverticulum. The ampulla contains a number of small seminal chambers embedded in the thick wall.

CHILOTA PRIESTI, Mich., f. MINOR, n.f.

Loc. Knysna forest; Dr. F. Purcell, leg.

External Characters. Length 100–140 mm., thickness 4 mm., number of segments 112–126.

Clitellum at the 13–16 segments (= 4), ring-shaped.

Seminal furrow laterally convex, passing the 18 segment laterally from the setae *ab*, which are normally developed.

Copulatory organs: Paired copulatory cushions at the 10, 11, 12 and 21 segments, an unpaired one at the 18 segment.

Internal Anatomy apparently like that of the typical form.

CHILOTA ALGOENSIS, Mich.

1899. *Chilota algoensis*, Michaelsen in Mt. Mus., Hamburg, xvi. p. 104, fig. 22.

Loc. Table Mountain near Cape Town.

CHILOTA PURCELLI (Bedd.).

1897. *Acanthodrilus purcelli*, Beddard in P. Zool. Soc., London, 1897, p. 337, f. 1.

1900. *Chilota purcelli*, Michaelsen in Tierreich, x., p. 147.

1905. *Chilota montanus*, Michaelsen in Deutsche Südpolar-Exp. 1901-1903, ix., Zool., i., p. 40, Taf. i., fig. 6a, 7.

Loc. Newlands slope of Table Mountain near Cape Town (types of *Acanthodrilus Purcelli*).

Table Mountain near Cape Town; Dr. F. Purcell, leg.

St. James, False Bay.

Simonstown, at the waterfall.

Remarks. Besides the statement of the identity of *Chilota Purcelli* (Bedd.) and *Ch. montanus*, Mich., resulting out of the comparison of the types, we need no further description of the species, as we have already an exact one under the title of *Ch. montanus*.

CHILOTA AFRICANUS (Bedd.).

1897. *Acanthodrilus africanus*, Beddard in P. Zool. Soc., London, 1897, p. 344, fig. 3.

1900. *Chilota africanus*, Michaelsen in Tierreich, x., p. 147.

Loc. Knysna in George (types of *Acanthodrilus africanus*).

Knysna, main forest; Dr. E. Warren, leg. Jan., 1911.

External Characters. Length 42-52 mm., thickness, $2\frac{1}{2}$ - $3\frac{1}{3}$ mm., number of segments 78-94.

Head tanylobous.

Setae ventrally widely paired, dorsally separated. In general $aa : ab : bc : cd = 5 : 3 : 6 : 6$. Towards the 18 segment *ab* diminishes. $dd = ca. \frac{1}{4} \mu$.

Nephridial pores in *c*.

Clitellum ring-shaped, at the 13-17 segments (= 5), only very slightly developed at the 13 and at the 17 segment.

Prostate pores in *b*.

Seminal furrows nearly straight, slightly convex laterally.

Spermathecal pores in *b*.

Copulatory organs: A single unpaired copulatory cushion ventrally at the 21 segment.

Internal Anatomy. Alimentary tract: Gizzard rather large.

Male organs: Two pairs of sperm-sacs in the 9 and 11 segments. Prostates restricted each to a single segment; glandular part coiled, duct short and very thin, strongly bent. Penial setae about 1.75 mm. long and proximally ca. 35μ thick, diminishing in breadth only a little towards the distal end, being 20μ thick a little before the distal tip. Middle part of the seta somewhat flattened, two-edged, with a more convex upper side and a flatter under side. Extreme distal end

for a length of about 0·2 mm. flattened and broadened (40μ broad), distally ending in an edge which is rounded at the side and deeply incised in the middle. The whole seta is bent like a fishing-hook. The more convex upper side of the middle part is ornamented by transverse groups or rows of fine and slender spinelets. Besides this ornamentation the penial seta shows in its distal quarter with exception of the flattened extreme distal end an annulation, depending upon the internal structure.

Spermathecae: Ampulla egg-shaped, duct about one-third as thick and half as long. Into the proximal part of the duct opens an unstalked, nearly globular or thickly kidney-shaped diverticulum which contains some rather large seminal chambers. These seminal chambers may be seen externally, causing more or less distinct flat protuberances at the surface of the diverticulum.

CHILOTA FAUCIUM, n. sp.

Loc. Table Mountain near Cape Town, Kasteels Poort Gorge; Dr. F. Purcell, leg.

External Characters. Length ca. 30 mm., thickness ca. $1\frac{2}{3}$ mm., number of segments 77-84.

Head tanylobous.

Setae at the ends of the body a little enlarged, in general ventrally very widely paired, dorsally separated or nearly so. At the middle part of the body $aa : ab : bc : cd = 24 : 13 : 18 : 17$. Towards the hinder end the width of the pairs enlarges still more; towards the 18 segment the width of the ventral pairs diminishes slowly but finally rather considerably. $dd = \text{ca. } \frac{2}{7} \mu$.

Nephridial pores in the lines of the setae *c*.

Clitellum ring-shaped, at the $13\frac{1}{2}$ -17 segments ($= 4\frac{1}{2}$).

Prostate pores upon small papillae between the lines of the setae *a* and *b*, perhaps somewhat nearer to the latter.

Spermathecal pores in *b*.

Internal Anatomy. Septa 5/6 tender, 6/7-14/15 thickened, but even the thicker middle ones not considerably.

Alimentary tract: A small glittering gizzard in the 5 segment. No distinct calciferous glands.

Male organs: Two pairs of sperm-sacs in the 9 and 11 segments. Prostates restricted each to one segment or to two neighbouring ones; glandular part serpentine; duct short, strongly bent. Penial setae ca. 1·2 mm. long and proximally 30μ thick, at the distal end about 18μ thick, simply but strongly bent; distal part flattened and

broadened, ca. 40μ broad, ending in a rounded and a little thickened edge, somewhat hollowed at one side. Distal part at the flat side occupied by irregularly scattered small triangular spinelets which are placed each at the proximal end of a small scar.

Spermathecae: Ampulla pear-shaped, duct about as long as the ampulla, thin, tubular. Into the distal end of the duct there opens at the fore-side a diverticulum, which has the shape of a forked tube; the diverticulum is strongly bent and closely applied to the duct of the ampulla.

CHILOTA KNYSNANUS, n. sp.

1897. ? *Acanthodrilus sclateri*, part ?, Beddard in P. Zool. Soc., London, 1897, p. 342.

1897. ? *Chilota sclateri*, part ?, Michaelsen in Tierreich, x., p. 148. Loc. Knysna forest (types of *Acanthodrilus sclateri*?).

External Characters. Length 52 mm., thickness $1-1\frac{1}{2}$ mm., number of segments 85.

Head epilobous (ca. $\frac{4}{7}$).

Setae of the dorsal pairs at the hinder end and at the middle segments of the antecitellar part of the body much enlarged, considerably larger than the ventral setae of the same segments. Setae ventrally more or less widely paired, dorsally separated. At the middle part of the body $aa : ab : bc : cd = 3 : 2 : 3 : 3$; at the hinder end $aa : ab : bc : cd = 3 : 2 : 5 : 5$, at the 8 segment $aa : ab : bc : cd = 3 : 2 : 5 : 4$.

Nephridial pores in the lines of the setae *c*.

Prostate pores in *b*.

Seminal furrows somewhat bent, laterally convex, passing the 18 segment laterally from the setae *ab*.

Spermathecal pores in *b*.

Internal Anatomy. Alimentary tract: A very small gizzard in front of the male organs. No calciferous glands.

Male organs: Prostates small, irregularly coiled. Penial setae ca. 0.75 mm. long, and proximally ca. 25μ thick, at the distal end 10μ thick, strongly bent in the distal half, whip-like or like a corkscrew; distal end a little flattened, but not much; no ornamentation.

Spermathecae: Ampulla thickly pear-shaped; duct short, thinner distally than proximally. Into the proximal part of the duct open two thick and unstalked diverticula which have the appearance of sac-like protuberances of the duct. The diverticula are provided with a large number of very small seminal chambers which are not perfectly separated from the central lumen of the diverticulum.

CHILOTA PARVUS, n. sp.

Loc. Newlands slope of Table Mountain near Cape Town; Dr. F. Purcell, leg. Aug., 1886.

External Characters. Length 26-30 mm., thickness ca. 2 mm., number of segments 80-90.

Head indistinctly tanylobous.

Setae at the hinder end of the body somewhat enlarged, in general widely paired or separated. At the fore-end of the body $aa : ab : bc : cd : dd = 5 : 3 : 5 : 5 : 10$, $dd = \frac{1}{4} \mu$; at the hinder end $aa : ab : bc : cd : dd = 4 : 3 : 4 : 4 : 6$.

Clitellum at the 13-17 segments (= 5), ring-shaped.

Prostate pores between the lines of the setae *a* and *b*.

Spermathecal pores in *b*.

Internal Anatomy. Septum $\frac{4}{5}$ complete; all septa tender, but 6/7-14/15 somewhat thicker than the others.

Alimentary tract: A small glittering gizzard in the 5 segment. No calciferous glands.

Male organs: Two pairs of sperm-sacs in the 9 and 11 segments. Prostates restricted to a single segment; glandular part serpentine, duct short and narrow. Penial setae about 0.6 mm. long, and proximally 18 μ thick, distally 15 μ thick, somewhat bent at the ends. Distal end flattened and broadened like a spatula, about 28 μ broad. Distal part with exception of this spatula occupied by numerous toothed transverse ridges which are placed at the crossing-points of two systems of spiral lines.

Spermathecae: Ampulla irregularly pear-shaped; duct thin, tubular, somewhat shorter than the ampulla. Into the distal end of the duct open at its fore-side by means of a common mouth two nearly globular unstalked diverticula which are separated from each other only imperfectly. The diverticula are provided with numerous very small seminal chambers which are only imperfectly separated from the central lumen of the diverticula.

[ACANTHODRILUS] SCLATERI, Bedd., spec. inquir. aut. spuria.

1897. *Acanthodrilus sclateri*, Beddard in P. Zool. Soc., London, 1897, p. 342.

1900. *Chilota sclateri*, Michaelsen in Tierreich, x., p. 148.

Loc. Knysna forest (types of *Acanthodrilus sclateri*).

Remarks. The bottle labelled by Beddard as *Acanthodrilus sclateri* contained, besides 3 fragments, 12 intact specimens out

of 19 specimens sent to Beddard. None of these 12 intact specimens can be regarded as the type of *A. sclateri* (spermathecae with two long tubular diverticula). These 12 specimens mostly belong to the species *Chilota excavatus* (Bedd.), whilst one proved to represent the new species *Chilota knysnanus* (see above); another specimen belongs to *Chilota lucifuga* (Bedd.), and the last one either to the same species, or to *Ch. photodilus* (Bedd.). The 3 fragments probably are *Ch. excavatus*. The real type of *Acanthodrilus sclateri*, if there existed a single type, perhaps has been totally dissected by Beddard, unless it forms a part of those specimens retained by him. I cannot help suspecting that *A. sclateri* is no real species at all, but that the diagnosis of it is composed out of the characters of different species, probably among them a *Microscolex*—or an *Eodrilus*—species; for in these genera the occurrence of “two long tubular diverticula” at the spermathecae is less rare than in the genus *Chilota*. *Acanthodrilus sclateri*, therefore, must be regarded as a “species inquirenda,” if not as a “species spuria.”

FAMILY GLOSSOSCOLECIDAE.

MICROCHAETUS PERINGUEYI, n. sp.

Loc. Nieuwoudtville in the Bokkeveld Mountains, Calvinia Division.

External Characters. Length 330 mm., thickness 6–10 mm., number of segments ca. 445.

Head prolobous. 4–9 segments divided each into two segment-like ringlets.

Setae very tender, laterally beginning behind the clitellum, ventrally beginning apparently at the 9 segment. Setae very strictly paired. Behind the clitellum $aa : bc : dd = 4 : 6 : 8$; at the hinder end of the body $aa : bc : dd = 4 : 5 : 6$. Ventral setae of the clitellar region transformed to sexual setae, about 0.9–1.0 mm. long, and in the width 50–55 μ thick, bent like an “S,” without nodule, roundly tri-carinated and simply pointed at the distal end, without ornamentation.

Nephridial pores considerably beneath the lines of the setae *c*, but much nearer to these than to the lines of the setae *b*.

Clitellum at the (12) 13–25 segments (= 13, if not = 14), apparently saddle-shaped. At each side a broad copulatory cushion extending

over the 17-20 segments. The ventral pairs of setae of the 25-27 segments placed upon transversely oval glandular papillae; some of the ventral pairs of setae in the fore-part of the clitellar region on similar but more indistinct papillae.

Spermathecal pores in groups of 2 to 6 at each side of the inter-segmental furrows 12/13-16/17, in the lines of the nephridial pores, and dorsally from them.

Internal Anatomy. Septa 4/5, 5/6, and 6/7 very strongly thickened, 7/8 and 8/9 moderately thickened, the following tender, and only 9/10 a little thicker than the very tender ones which follow it.

Alimentary tract: A large gizzard in the 7 segment. A large, nearly globular swelling of the oesophagus apparently restricted to the 10 segment represents the calciferous gland.

Male organs: Two pairs of spermiducal funnels in the 10 and 11 segments, each pair enclosed in an unpaired transverse seminal vesicle; each of the latter is laterally continued into a spermsac-like appendix. Two pairs of sperm-sacs in the 11 and 12 segments communicate with these appendices of the seminal vesicles.

Spermathecae pear-shaped, shortly and narrowly stalked.

Glands of sexual setae 16 pairs in the 12-17 segments. The glands have the shape of a slightly bent thick sausage, opening through a narrow and rather short duct.

MICROCHAETUS BENHAMI, Rosa.

1891. *Microchaeta benhami*, Rosa in Ann. Hofmus. Wien, vi., p. 382, Taf. xiii., fig. 1.

1900. *Microchaetus benhami*, Michaelsen in Tierreich, x., p. 451.

Loc. Moddergat, near Lynedoch, in the Stellenbosch district; L. Péringuey, Sept. 13, 1910.

Farm Bergvliet, near Constantia, S. of Cape Town; Dr. F. Purcell, Aug., 1909.

Remarks. The locality in which the type of this species has been found was unknown. This is the first record of the native locality of this species.

FAMILY LUMBRICIDAE.

HELODRILUS (EISENIA) ROSEA, (Sav.).

1900. *Eisenia rosca*, Michaelsen in Tierreich, x., p. 478.

Loc. George; Dr. F. Purcell.

HELODRILUS (BIMASTUS) CONSTRICTUS, (Rosa).

1900. *Helodrilus (Bimastus) constrictus*, Michaelsen in Tierreich, x., p. 503.

Loc. Table Mountain near Cape Town; Dr. F. Purcell.

The paper alluded to by Dr. Michaelsen on page 43 has been published in the Zoologischer Jahrbücher for June, 1913. The descriptions of the new species have thus precedence over those of the present issue.

All types of species herein described, save that of form *castaneus*, Mich. of *Chilota photodilus* (Bedd.), are, of course, in the S.A. Museum Collection.

L. P.